ODFJELL

April 30, 2020

SC DHEC BAQ
Manager, Technical Management Section
2600 Bull Street
Columbia, SC 29201

Subject: **Odfjell Terminals (Charleston) LLC (OTC)**
Annual Emission Report
April 1, 2019 to March 31, 2020
Air Operating Permit No. CM-0560-0421

To whom it may concern:

Attached please find the annual emission report covering the period ending March 31, 2020. The below table represents the monitoring of emissions that are being submitted. The Pilot Flame Outage Report is being submitted under separate letterhead.

This report covers the following:

Permit No:	CM-0560-0421
Type of Report & Reporting Period:	Annual
Reporting Period:	April 1, 2019 to March 31, 2019
Permit Conditions Numbers:	C.9: Annual Emissions Rolling Avg Summary SO2 Emissions, SO2/VOC Emissions, VOC/HAP, Emissions, VOC Emissions
Control Device Operational Range Exceedances Permit Condition 5.A.3	None during the reporting period
Contact Person: Contact Information:	Darrell McCann 843-714-6319 Darrell.mccann@odfjell.com

Please feel free to contact me at 843-714-6319 or darrell.mccann@odfjell.com should you have any questions.

Sincerely,

Darrell McCann
Sr. HSE Engineer

ec: John Heil; OTH
Edwin Marcial, OTH
EPA Region 4

Certified Mail:

	Summary	VOC - Total				CAA HAP's - Tons		Std 8 TAP's - Tons		Single HAP's - Tons						SO_2 Emissions		
	Month	Flare lbs	Incidence lbs	Tons	12-Month Rolling	Monthly	12-Month Rolling	Monthly	12-Month Rolling	Monthly	12-Month Rolling	Monthly	12-Month Rolling	Monthly	12-Month Rolling	Chemical Based	Fuel Based Tons (2)	12-Month Rolling (SO2)
1	January, '14	1st product received February 12, 2014														(3)	0.000	
2	February, '14	2.889	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001		0.000		0.000		(1)	0.000	0.000
3	March, '14	2.827	0.000	0.001	0.003	0.001	0.003	0.001	0.003	0.000	0.001	0.001	0.001			(1)	0.000	0.001
4	April, '14	39.324	0.000	0.020	0.023	0.020	0.023	0.020	0.023	0.002	0.003	0.018	0.019			(1)	0.001	0.001
5	May, '14	3.167	0.000	0.002	0.024	0.002	0.024	0.002	0.024	0.002	0.005	0.000	0.019			(1)	0.000	0.001
6	June, '14	13.214	0.000	0.007	0.031	0.007	0.031	0.007	0.031	0.002	0.006	0.005	0.024			(1)	0.000	0.002
7	July, '14	10.770	0.000	0.005	0.036	0.005	0.036	0.005	0.036	0.002	0.008	0.004	0.028			(1)	0.000	0.002
8	August, '14	36.333	0.000	0.018	0.054	0.005	0.041	0.005	0.041	0.001	0.009	0.004	0.032			(1)	0.000	0.002
9	September, '14	54.460	0.000	0.027	0.081	0.002	0.043	0.002	0.043	0.002	0.011	0.000	0.032			(1)	0.000	0.002
10	October, '14	106.803	0.000	0.053	0.135	0.002	0.045	0.002	0.045	0.002	0.013	0.000	0.032			(1)	0.001	0.003
11	November, '14	51.213	0.000	0.026	0.160	0.000	0.045	0.000	0.045	0.000	0.013	0.000	0.032			(1)	0.001	0.004
12	December, '14	7.764	0.000	0.004	0.164	0.000	0.045	0.000	0.045	0.000	0.013	0.000	0.033			(1)	0.001	0.006
13	January, '15	7.810	0.000	0.004	0.168	0.000	0.046	0.000	0.046	0.000	0.013	0.000	0.033			(1)	0.001	0.007
14	February, '15	0.699	0.000	0.000	0.167	0.000	0.045	0.000	0.045	0.000	0.012	0.000	0.033			(1)	0.001	0.007
15	March, '15	5.574	0.000	0.003	0.169	0.000	0.043	0.000	0.043	0.000	0.012	0.000	0.032			(1)	0.001	0.007
16	April, '15	5.074	0.000	0.003	0.151	0.000	0.024	0.000	0.024	0.000	0.010	0.001	0.014			(1)	0.001	0.007
17	May, '15	5.531	0.000	0.003	0.153	0.000	0.022	0.000	0.022	0.000	0.009	0.001	0.015			(1)	0.000	0.007
18	June, '15	5.222	0.000	0.003	0.149	0.001	0.016	0.001	0.016	0.001	0.008	0.000	0.010			(1)	0.000	0.008
19	July, '15	7.457	0.000	0.004	0.147	0.000	0.011	0.000	0.011	0.000	0.006	0.001	0.007			(1)	0.001	0.008
20	Aug, '15	8.779	0.000	0.004	0.133	0.000	0.006	0.000	0.006	0.000	0.005	0.002	0.004			(1)	0.001	0.008
21	Sept, '15	13.732	0.000	0.007	0.113	0.000	0.004	0.000	0.004	0.000	0.004	0.002	0.006			(1)	0.001	0.009
22	Oct, '15	9.579	0.000	0.005	0.064	0.000	0.002	0.000	0.002	0.000	0.002	0.001	0.007			(1)	0.000	0.008
23	Nov, '15	36.358	0.000	0.018	0.057	0.000	0.002	0.000	0.002	0.000	0.002	0.004	0.011			(1)	0.000	0.007
24	Dec, '15	39.283	0.000	0.020	0.073	0.000	0.003	0.000	0.003	0.000	0.002	0.004	0.015			(1)	0.001	0.005
25	Jan, '16	18.500	375.000	0.197	0.265	0.002	0.004	0.002	0.004	0.002	0.004	0.005	0.020			(1)	0.001	0.004
26	Feb, '16	43.790	0.000	0.022	0.287	0.000	0.004	0.000	0.004	0.000	0.004	0.005	0.025			(1)	0.001	0.004
27	Mar, '16	19.162	0.000	0.010	0.294	0.001	0.005	0.001	0.005	0.001	0.005	0.002	0.027			(1)	0.001	0.006
28	Apr '16	48.451	162.000	0.105	0.396	0.001	0.006	0.001	0.006	0.001	0.006	0.002	0.028			(1)	0.001	0.007
29	May '16	49.337	91.000	0.070	0.464	0.000	0.006	0.000	0.006	0.000	0.006	0.002	0.030			(1)	0.001	0.007
30	June '16	22.375	0.000	0.011	0.472	0.001	0.006	0.001	0.006	0.001	0.006	0.004	0.033			(1)	0.001	0.008

	Summary	VOC - Total				CAA HAP's - Tons		Std 8 TAP's - Tons		Single HAP's - Tons						SO_2 Emissions		
	Month	Flare lbs	Incidence lbs	Tons	12-Month Rolling	Monthly	12-Month Rolling	Monthly	12-Month Rolling	Monthly	12-Month Rolling	Monthly	12-Month Rolling	Monthly	12-Month Rolling	Chemical Based	Fuel Based Tons (2)	12-Month Rolling (SO2)
31	July '16	36.669	0.000	0.018	0.487	0.000	0.006	0.000	0.006	0.000	0.006	0.002	0.035			(1)	0.000	0.007
32	Aug '16	47.401	136.000	0.092	0.574	0.001	0.006	0.001	0.006	0.001	0.006	0.002	0.035			(1)	0.000	0.007
33	Sept '16	49.389	0.000	0.025	0.592	0.000	0.006	0.000	0.006	0.000	0.006	0.003	0.035			(1)	0.000	0.006
34	Oct '16	78.633	0.000	0.039	0.627	0.001	0.007	0.001	0.007	0.001	0.007	0.002	0.036			(1)	0.000	0.006
35	Nov '16	110.844	11.975	0.061	0.670	0.000	0.007	0.000	0.007	0.000	0.007	0.002	0.035			(1)	0.000	0.006
36	Dec '16	86.204	0.000	0.043	0.693	0.001	0.007	0.001	0.007	0.001	0.007	0.001	0.031			(1)	0.000	0.006
37	Jan '17	75.259	0.000	0.038	0.534	0.001	0.006	0.001	0.006	0.001	0.006	0.002	0.029			(1)	0.000	0.005
38	Feb '17	30.624	0.000	0.015	0.528	0.000	0.006	0.000	0.006	0.000	0.006	0.002	0.025			(1)	0.000	0.005
39	Mar '17	62.967	0.000	0.031	0.550	0.001	0.006	0.001	0.006	0.001	0.006	0.003	0.026			(1)	0.000	0.005
40	Apr'17	25.258	46.000	0.036	0.480	0.001	0.006	0.001	0.006	0.001	0.006	0.002	0.026			(1)	0.000	0.004
41	May '17	62.610	1089.000	0.576	0.986	0.001	0.006	0.001	0.006	0.001	0.006	0.002	0.026			(1)	0.000	0.004
42	June '17	62.048	29.900	0.046	1.020	0.001	0.006	0.001	0.006	0.001	0.006	0.004	0.026			(1)	0.000	0.003
43	July '17	64.952	0.000	0.032	1.035	0.032	0.039	0.032	0.039	0.032	0.039	0.003	0.027	0.000	0.000	(1)	0.000	0.003
44	Aug '17	62.301	9.000	0.036	0.978	0.031	0.069	0.031	0.069	0.031	0.069	0.004	0.028	0.000	0.000	(1)	0.000	0.003
45	Sept '17	150.561	36.900	0.094	1.048	0.074	0.143	0.074	0.143	0.074	0.143	0.004	0.029	0.000	0.000	(1)	0.000	0.003
46	Oct '17	12.675	29.900	0.021	1.029	0.006	0.148	0.006	0.148	0.006	0.148	0.002	0.030	0.000	0.000	(1)	0.000	0.003
47	Nov '17	11.107	2.000	0.007	0.975	0.006	0.154	0.006	0.154	0.006	0.154	0.002	0.029	0.000	0.000	(1)	0.000	0.003
48	Dec '17	14.398	0.000	0.007	0.939	0.007	0.160	0.007	0.160	0.007	0.160	0.001	0.030	0.000	0.000	(1)	0.000	0.003
49	Jan-18	11.661	0.000	0.006	0.907	0.001	0.161	0.001	0.161	0.001	0.161	0.001	0.029	0.000	0.000	(1)	0.000	0.002
50	Feb-18	19.321	0.000	0.010	0.901	0.005	0.166	0.005	0.166	0.005	0.166	0.002	0.029	0.003	0.003	(1)	0.000	0.002
51	Mar-18	21.501	0.000	0.011	0.881	0.007	0.172	0.007	0.172	0.007	0.172	0.001	0.027	0.005	0.008	(1)	0.000	0.002
52	Apr-18	21.090	0.000	0.011	0.855	0.008	0.179	0.008	0.179	0.008	0.179	0.002	0.028	0.005	0.013	(1)	0.000	0.002
53	May-18	13.287	0.000	0.007	0.286	0.003	0.182	0.003	0.182	0.003	0.182	0.003	0.028	0.000	0.013	(1)	0.000	0.002
54	Jun-18	29.845	0.000	0.015	0.255	0.011	0.193	0.011	0.193	0.001	0.182	0.003	0.027	0.008	0.021	(1)	0.000	0.002
55	Jul-18	16.347	1395.000	0.706	0.928	0.005	0.165	0.005	0.165	0.000	0.150	0.004	0.029	0.001	0.022	(1)	0.001	0.003
56	Aug-18	28.304	0.000	0.014	0.907	0.012	0.146	0.012	0.146	0.000	0.119	0.002	0.027	0.009	0.031	(1)	0.000	0.003
57	Sep-18	22.561	0.000	0.011	0.824	0.008	0.080	0.008	0.080	0.000	0.046	0.001	0.025	0.001	0.032	(1)	0.000	0.003
58	Oct-18	32.382	0.000	0.016	0.819	0.012	0.085	0.012	0.085	0.000	0.040	0.001	0.024	0.010	0.042	(1)	0.001	0.003
59	Nov-18	34.457	0.000	0.017	0.830	0.009	0.089	0.009	0.089	0.000	0.034	0.001	0.023	0.006	0.049	(1)	0.000	0.003
60	Dec-18	19.957	0.000	0.010	0.833	0.006	0.087	0.006	0.087	0.000	0.027	0.001	0.023	0.004	0.053	(1)	0.000	0.004
61	Jan-19	21.594	0.000	0.011	0.838	0.007	0.093	0.007	0.093	0.000	0.026	0.004	0.026	0.002	0.055	(1)	0.000	0.004
62	Feb-19	21.644	0.000	0.011	0.839	0.007	0.094	0.007	0.094	0.000	0.021	0.003	0.027	0.002	0.054	(1)	0.000	0.004
63	Mar-19	19.001	0.000	0.010	0.838	0.006	0.093	0.006	0.093	0.000	0.015	0.004	0.030	0.001	0.050	(1)	0.000	0.004
64	Apr-19	12.028	0.000	0.006	0.833	0.003	0.088	0.003	0.088	0.001	0.008	0.003	0.030	0.000	0.045	(1)	0.000	0.004
65	May-19	20.843	0.000	0.010	0.837	0.006	0.091	0.006	0.091	0.000	0.005	0.005	0.033	0.000	0.045	(1)	0.001	0.004
66	Jun-19	15.180	0.000	0.008	0.830	0.002	0.081	0.002	0.081	0.000	0.004	0.002	0.032	0.000	0.037	(1)	0.000	0.004
67	Jul-19	16.031	0.000	0.008	0.132	0.003	0.079	0.003	0.079	0.000	0.004	0.002	0.030	0.000	0.036	(1)	0.000	0.004
68	Aug-19	17.962	0.000	0.009	0.127	0.004	0.072	0.004	0.072	0.000	0.004	0.004	0.032	0.000	0.027	(1)	0.000	0.004
69	Sep-19	16.814	0.000	0.008	0.124	0.004	0.068	0.004	0.068	0.000	0.003	0.004	0.035	0.000	0.026	(1)	0.000	0.004

	Summary	*VOC - Total*				*CAA HAP's - Tons*		*Std 8 TAP's - Tons*		*Single HAP's - Tons*						SO_2 Emissions		
	Month	Flare lbs	Incidence lbs	Tons	12-Month Rolling	Monthly	12-Month Rolling	Monthly	12-Month Rolling	Monthly	12-Month Rolling	Monthly	12-Month Rolling	Monthly	12-Month Rolling	Chemical Based	Fuel Based Tons (2)	12-Month Rolling (SO2)
70	Oct-19	16.065	0.000	0.008	0.116	0.005	0.062	0.005	0.062	0.000	0.003	0.005	0.039	0.000	0.016	(1)	0.000	0.003
71	Nov-19	14.129	0.000	0.007	0.106	0.004	0.057	0.004	0.057	0.000	0.004	0.004	0.042	0.000	0.009	(1)	0.000	0.003
72	Dec-19	14.788	0.000	0.007	0.103	0.004	0.056	0.004	0.056	0.000	0.004	0.003	0.044	0.001	0.006	(1)	0.000	0.003
73	Jan-20	14.538	0.000	0.007	0.100	0.003	0.051	0.003	0.051	0.000	0.004	0.003	0.043	0.001	0.005	(1)	0.000	0.003
74	Feb-20	14.423	0.000	0.007	0.096	0.005	0.050	0.005	0.050	0.000	0.004	0.003	0.044	0.001	0.004	(1)	0.000	0.003
75	Mar-20	22.173	0.000	0.011	0.097	0.009	0.053	0.009	0.053	0.001	0.004	0.006	0.045	0.002	0.005	(1)	0.000	0.003

Summary	*VOC - Total*				*CAA HAP's - Tons*		*Std 8 TAP's - Tons*		*Single HAP's - Tons*						SO_2 Emissions		
Month	Flare lbs	Incidence lbs	Tons	12-Month Rolling	Monthly	12-Month Rolling	Monthly	12-Month Rolling	Monthly	12-Month Rolling	Monthly	12-Month Rolling	Monthly	12-Month Rolling	Chemical Based	Fuel Based Tons (2)	12-Month Rolling (SO2)

(1) Permit Condition C.9, SO_2 emissions from sulfur containing compounds; none were received, transferred or stored during the reporting period.
(2) Permit Condition C.9, SO_2 emissions from operation of the flare
(3) Although no chemicals were onsite until February, there was testing of the flare system in January; Hence, no chemical based SO_2 emissions

VOC Chemicals:

Name	CAS	CAA HAP	DHEC TAP
Monochlorobenzene - MCB	108-90-7	Yes	Yes
Paraxylene - PX	106-42-3	Yes	Yes
Ethylene Glycol		Yes	Yes
Isoprene	78-79-5	No	No
No. 2 Diesel	68476-34-6	No	No

Limits: Ten(10) tons any single HAP; twenty-five(25) tons combined HAPS
VOC's limited to 100 tons per year
SO_2 limited 100 tons per year
All limits are on a 12-month rolling sum

Emission Algorithms

Transfers: Vessel to Tank, Tank to Tank, Tank to Railcar/Truck; Using Flare As Control Device

$L_L = 12.46\ (S*P*M)/T\ \times (1-95\%)$ From AP-42, Section 5.2, and Construction Permit Application

L_L	Loading Loss, lbs/1000 gallons of liquid loaded
S	Saturation Factor, from AP-42, Table 5.2-1
P	Vapor Pressure, psia
M	Molecular Weight, lb/lb-mole
T	Temperature, °R
1-95%	Destruction Removal Efficiency

Note: Flare DRE was set at 99.8% from November 15, 2014 stack test

SO_2 Emissions From Propane Usage in Flare

Lbs. $SO_2 = (0.10*G)/1000$
Where:

0.100	Lbs. SO_2/gallon propane; From permit application, Dec. 2010, Emission Assumptions & Calculations I, pg. 2; an AP-42 source
G	gallons of propane used
1000.000	Emission factor is lbs./1000 gallons propane

Note: Also see SO_2 Emissions From Flare, 2014 tab for more detailed information.

Incidences - Operation of the flare outside normal operational ranges

$L_L = 12.46\ (S*P*M)/T\ \times (1-\mathbf{50}\%)$ From AP-42, Section 5.2, and Construction Permit Application

Where flare operation is assumed to be at least 50% control